

Sulfur Metabolism Affiliated Genes

Gene	ORF	AsIII	Cd ²⁺	H ₂ O ₂	Enzyme
		Fold Change			
Sulfate Assimilation					
MET3	YJR010W	5.0-20.0	10.8	1.0-3.0	ATP Sulfurylase
MET14	YKL001C	2.0-14.0	9.6	2.0-3.0	APS Kinase
MET16	YPR167C	2.0-12.0	9.1	NC	PAPS Reductase
MET22 (0.5h, 1mM AsIII)	YOL064C	3.3	2.5	NC	Diphosphonucleoside phosphohydrolase
MET10	YFR030W	3.0-5.0	5.2	NC	Sulfite Reductase Alpha
MET5/ECM17	YJR137C	2.0-5.0	4.5	2.0-4.0	Sulfite Reductase Beta
MET1/20	YKR069W	NC	6	NC	Uroporphyrinogen III methylase
MET8	YBR213W	NC	7	2.0-4.0	Siroheme synthase
Sulfide Incorporation and Transulfuration Pathways					
MET2	YNL277W	4.0-3.0	4.6	NC	Homoserine transacetylase
MET25/17	YLR303W	NC	4.8	NC	O-Acetylhomoserine sulfhydrylase
STR4/CYS4	YGR155W	2.0-2.7	2.5	2.0-3.0	Cystathione B-synthase
STR1/CYS3 (4h, 100uM AsIII)	YAL012W	3.5	13.4	NC	Cystathione-lyase
STR3	YGL184C	2.2-3.9	13.5	2.0-4.0	Cystathione G-synthase
YFR055W	YFR055W	9.0-5.0	1.1	NC	Cystathione-lyase
Methionine and AdoMet Biosynthesis					
MET6	YER091C	1.0-3.5	NC	2.0-5.0	N5-Methyltetrahydrofolate homocysteine transferase
MET7	YOR241W	NC	1.6	NC	Tetrahydrofolyl polyglutamate synthase
MET13	YGL125W	NC	NC	1.0-3.0	Methylene tetrahydrofolate reductase
SAM1 (4h, 100uM AsIII)	YLR180W	2.5	NC	2.0-9.0	AdoMet synthetase
SAM2 (4h, 100uM AsIII)	YDR502C	3.8	NC	2.0-4.0	AdoMet synthetase
MHT1	YLL062C	5.0-2.8	10.6	NC	S-methylmethionine:homocysteine S-methyltransferase
Sulfur Compound Uptake					
SUL1	YBR294W	5.4-2.4	20	NC	Sulfate Transporter
SUL2	YLR092W	2.5-2.8	3	NC	Sulfate Transporter
MUP1 (2h and 4h, 100uM AsIII)	YGR055W	5.0-14.0	2	1.0-4.0	Methionine Permease, high affinity
MUP3	YHL036W	8.0-7.0	7	NC	Methionine Permease, low affinity
Regulatory Genes					
MET4 (2h, 100uM AsIII)	YNL103W	2	1.5	NC	b ZIP
MET28	YIR017C	NC	5	NC	b ZIP
CBF1	YJR060W	NC	2	NC	b HLH
MET30	YIL046W	5.0-1.6	7	NC	WD40 repeats F BOX
MET31	YPL039W	NC	1	1.0-7.0	ZINC FINGER
MET32	YDR253C	6.0-3.6	14	1.0-4.0	ZINC FINGER

Table 2. Arsenic treatment stimulates a sulfur response in yeast. Gene expression data comparisons between arsenic, cadmium, and hydrogen peroxide treated *Saccharomyces cerevisiae* reveal arsenic and cadmium mediated sulfur responses, but none with hydrogen peroxide.

*AsIII column = 2h, 100uM and 0.5h, 1mM (combined biological replicates), unless noted.

*Cadmium column = 1h, 1mM, Fauchon et al. 2002

*H₂O₂ column = 10, 20, 40, 60, 120min., 400uM, Causton et al. 2001

*Red, green, yellow, denote induction, repression, no change, respectively.